



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,348	06/23/2003	Pascal Audinot	TIF-33831	1230

23494 7590 04/18/2007  
TEXAS INSTRUMENTS INCORPORATED  
P O BOX 655474, M/S 3999  
DALLAS, TX 75265

EXAMINER
----------

HANNON, CHRISTIAN A

ART UNIT	PAPER NUMBER
----------	--------------

2618

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/18/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/601,348	AUDINOT ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Christian A. Hannon	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,9,10 and 13-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9,10 and 13-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

This action is response to applicant's response filed on 3/9/2007. Claims 1, 3-7, 9-10, 13-25 are now pending in the present application. **This action is made final.**

#### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 25 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claim 25 introduces the new subject matter "free of counting a number of the most significant of said bit." Nowhere in the specification is this language explicitly supported. In fact the claim is further obscured by the fact that the cited portion the Applicant has provided to suggest the notion of the new claim is in fact not new matter, actually provides for counting a number of the most significant bit. To count is to ascertain the value of a number, and in the examples provided by the Applicant the invention of the present application does in fact ascertain the value of the MSB, or count the value of the MSB.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-7, 9, 10 & 13-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motley et al (US 3,931,584), hereinafter Motley, in view of the Applicant admitted prior art, hereinafter AAPA.

Regarding claims 1 & 7, Motley teaches analog to digital circuitry and method for generating a digital representation of an amplified analog signal at an input (Figure 3, Items 19 & 20; Motley), adjustable gain control circuitry for receiving a radio signal and outputting the amplified analog signal using a gain determined directly by a bit signal at an output of the analog to digital circuitry (Figure 3, Item 17; Column 3, Lines 8-10; Column 5, Lines 12-25; Column 7, Lines 32-35; Motley). However Motley fails to teach digital channel filtering circuitry for filtering said digital representation and digital processing circuitry for processing the output of said digital channel filtering circuitry. The AAPA teaches a receiver with digital channel filtering circuitry for filtering a digital representation and digital processing circuitry for processing the output of said digital channel filtering circuitry (Figure 1, Items 24 & 26; Page 6, [0018]; AAPA). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the teaching of digital channel filters and digital signal processing into

the teachings of Motley as Motley only introduces a specific automatic gain control (AGC) technique which reduces power level fluctuations in signal processing, however when used in the receiver structure of the AAPA Motley adds the benefit of reduced power fluctuations. Furthermore claim 7 reads as an analogous method claim to the apparatus of claim 1 and is therefore similarly rejected, hereinafter all similar apparatus and method claims will be rejected under the same conditions.

With respect to claim 3 & 9, Motley and the AAPA teach the receiver and method of claims 1 & 7 respectively, furthermore Motley teaches wherein said gain is reduced by a first amount responsive to a most significant of said bit signal indicating that the analog to digital converter has exceeded a first saturation threshold (Column 5, Lines 12-14; Column 9, Lines 4-15; Motley).

In regards to claim 4, Motley and the AAPA teach the receiver of claim 3, wherein said adjustable gain control circuitry reduces said gain independent of said digital processing circuitry (Column 5, Lines 12-14; Column 9, Lines 4-15; Motley).

With regard to claim 5 & 10, Motley and the AAPA teach the receiver and method of claims 3 & 7 respectively, wherein said gain is reduced by a second amount responsive to a set of most significant bits of said bit signal indicating that the analog to digital converter has exceeded a second saturation threshold (Column 5, Lines 12-14; Column 9, Lines 4-15; Motley). Motley teaches quantized levels indicating up to 511 possible 'thresholds' (Column 5, Lines 14-16; Motley).

Regarding claim 6, Motley and the AAPA teach the receiver of claim 1, wherein said gain is increased responsive to a set of most significant bits of said bit signal

Art Unit: 2618

indicating that the analog to digital converter is below a threshold (Column 5, Lines 12-14; Column 9, Lines 4-15; Motley). Motley teaches quantized levels indicating up to 511 possible 'thresholds' (Column 5, Lines 14-16; Motley).

With regards to claim 13 Motley teaches a receiver comprising adjustable gain control circuitry for receiving a radio signal and outputting an amplified analog signal using a gain determined directly by a single sample of digital representation at an output of an analog to digital circuitry (Figure 3, Items 19 & 20; Column 5, Lines 25-30; Motley). However Motley fails to teach digital channel filtering circuitry for filtering said digital representation and digital processing circuitry for processing the output of said digital channel filtering circuitry. The AAPA teaches a receiver with digital channel filtering circuitry for filtering a digital representation and digital processing circuitry for processing the output of said digital channel filtering circuitry (Figure 1, Items 24 & 26; Page 6, [0018]; AAPA). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the teaching of digital channel filters and digital signal processing into the teachings of Motley as Motley only introduces a specific automatic gain control (AGC) technique which reduces power level fluctuations in signal processing, however when used in the receiver structure of the AAPA Motley adds the benefit of reduced power fluctuations.

In regards to claim 14, Motley and AAPA teach the receiver of claim 13 wherein said AGC circuitry is coupled to receive an output signal from at least one low pass filter (Figure 1, Item 18; AAPA).

Regarding claim 15, Motley and AAPA teach the receiver of claim 14 wherein at least one input of said at least one low pass filter is coupled to an output of at least one mixer (Figure 1, Item 16; AAPA).

In regards to claim 16, Motley and AAPA teach the receiver of claim 15, wherein at least one input of said at least one mixer is coupled to an output of an amplifier (Figure 1, Item 14; AAPA).

Regarding claim 17, Motley and AAPA teach the receiver of claim 16, wherein at least one input of said amplifier is coupled to an output of a bandpass filter (Figure 1, Item 13; AAPA).

In regards to claim 18, Motley and AAPA teach the receiver of claim 14 wherein said at least one low pass filter comprises two low pass filters (Figure 1, Item 18 [I Path], Item 18 [Q Path]; AAPA).

Regarding claim 19, Motley and AAPA teach the receiver of claim 13 wherein said adjustable gain control circuitry comprises two gain control circuits (Column 3, Lines 23-25; Motley), whereby both sensitivity and interference tests may be conducted (Column 3, Lines 23-60; Motley).

In regards to claim 20, Motley and AAPA teach the receiver of claim 13 wherein at least an MSB bit of said digital representation at said output of the analog to digital circuitry is directly connected to an input of said adjustable gain control circuitry (Column 7, Lines 64-67; Motley).

Regarding claim 21, Motley and AAPA teach the receiver of claim 13 wherein said analog to digital circuitry comprises two analog to digital circuits (Figure 1, Item 22

[I & Q Paths]; AAPA) one of said analog to digital circuits having an output directly connected to an input of said adjustable gain control circuitry whereby both sensitivity and interference tests may be performed (Column 3, Lines 23-60; Motley).

In regards to claim 22, Motley and AAPA teach the receiver of claim 1, wherein said gain is operable to be reduced and increased by different thresholds, respectively, whereby hysteresis is prevented (Column 4, Lines 62-67; Column 5, Lines 1-5; 20-24; Motley).

In regards to claim 23, Motley and AAPA teach the method of claim 7, wherein said gain is operable to be reduced and increased by different thresholds, respectively, whereby hysteresis is prevented (Column 4, Lines 62-67; Column 5, Lines 1-5; 20-24; Motley).

In regards to claim 24, Motley and AAPA teach the receiver of claim 13, wherein said gain is operable to be reduced and increased by different thresholds, respectively, whereby hysteresis is prevented (Column 4, Lines 62-67; Column 5, Lines 1-5; 20-24; Motley).

### ***Response to Arguments***

5. Applicant's arguments filed 3/9/2007 have been fully considered but they are not persuasive.

Regarding Applicants argument of independent claims 1, 7 & 13 recite 'directly' or 'control directly' whereas Motley teaches 'indirect control.' The examiner disagrees, Motley in fact teaches 'direct' control as taught by the applicant (Column 9, Lines 4-7; Motley). The examiner makes it of record that the direct control affected by applicant's



AGC circuit 32 of Figure 2, is analogous to the AGC circuit of Motley (Figure 3, Item 17; Motley). Further the applicant wished to argue that the addition of component 60 of figure 3 of Motley rendered the teaching as 'indirect control,' again the examiner disagrees. Element 60 of Motley Figure 3, is an integral portion of the AGC circuit, the entire operation of the direct AGC circuit of one embodiment of Motley requires item 60 in order to feed the circuit and merely acts as a feed or input to the circuit (Column 7, Lines 60-69; Column 8, Lines 1-10; Motley). Further Motley does in fact teach an embodiment not requiring the input element 60 when a particular type of bit semantics is used (Column 8, Lines 45-48; Motley).

Regarding Applicant's argument that Motley fails to teach a 'single sample' portion of the recited claim, again the Examiner disagrees. The Examiner contends that the last sample before a count reaches a threshold is the ultimate determiner of whether or not a gain increase or decrease or neither is applied to the signal in the receiver. It is this last sample that determines the instantaneous change (Column 8, Lines 11-25; Motley). The Applicant further argued that Motley fails to teach a "radio signal." However Motley explicitly states that the novel use of direct bit controlled AGC may be applied in any channel medium, thereby not limited to include the teaching of RF signals, which is obvious to one in the receiver art (Column 9, Lines 17-20; Motley).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was

Art Unit: 2618

within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). The Examiner's motivation for combining Motley with the AAPA was in order to affect a purpose for the AGC in a particular type of receiver, thereby benefiting the receiver with the benefits of Motley. The Examiner maintains the stance that all 103(a) rejections herein this rejection are proper. All claims remain rejected as previously set forth.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian A. Hannon whose telephone number is (571) 272-7385. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 4:30 PM.

Art Unit: 2618

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



C. A. Hannon  
April 11, 2007



EDWARD F. URBAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600